

VU Research Portal

Road traffic incident management and situational awareness

Steenbruggen, J.G.M.

2013

document version

Publisher's PDF, also known as Version of record

[Link to publication in VU Research Portal](#)

citation for published version (APA)

Steenbruggen, J. G. M. (2013). *Road traffic incident management and situational awareness*. [PhD-Thesis – Research external, graduation internal, Vrije Universiteit Amsterdam]. VU University.

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal ?

Take down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

E-mail address:

vuresearchportal.ub@vu.nl

Road Traffic Incident Management and Situational Awareness

John Steenbruggen



Vrije Universiteit Amsterdam

Since the early 1970s, everywhere in the developed world, steadily growing traffic volumes and traffic intensity have led to enormous congestion and mobility problems, especially during the rush hours. The goal of sustainable mobility is one of the biggest challenges in modern traffic management. Traffic incidents have a significant impact on a reliable transport system. Incident Management is, in general, the policy that, through a set of measures, aims to reduce both the negative effects on the traffic flow conditions and the effects on safety, by shortening the period needed to clear the road after an incident has happened.

In many studies, information sharing and the introduction of new technologies have been identified as important constraints for the further improvement for cooperation. This thesis confirmed that the introduction of net-centric information systems significantly improves situational awareness to support effective decision-making.

Another contribution of this thesis is the use of mobile phone data to support traffic incident management. This thesis investigated the effects of hourly variations in mobile phone intensity on the number of traffic incidents on the highways of greater Amsterdam. The findings of our case study have statistically confirmed the use of such spatio-temporal data. These data can be seen as an additional tool, in terms of collective sensing, to develop an early warning system to detect motorway traffic incidents. In a broader perspective, such data can be also used to develop more sophisticated tools for larger disasters and crisis management.

John Steenbruggen (1965) obtained his bachelor's degree in Geodesy at the High Technical School Utrecht, his post bachelor's degree in Business Economics at the High Economic Administrative School Breda and his master's degree in Technology and Society at the Technical University Eindhoven. He is currently working at the Dutch ministry of Infrastructure and Environment. John is also affiliated as a visiting researcher with the VU University Amsterdam.